



**SOFIA UNIVERSITY „ST. KLIMENT OHRIDSKI“  
FACULTY OF EDUCATIONAL STUDIES AND THE ARTS  
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**Magdalena Zlatkova Delinesheva**

**ABSTRACT**

**of**

**a dissertation entitled**

**DIDACTIC TECHNOLOGY FOR BUILDING THE SENSE OF  
INITIATIVE AND ENTREPRENEURSHIP THROUGH ELECTIVE  
ACTIVITIES IN TECHNOLOGIES AND ENTREPRENEURSHIP IN  
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**Scientific supervisor:**

**Assoc. Prof. Dr Nikolay Ivanov Tsanev**

**Sofia**

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The dissertation consists of 332 pages, of which 161 pages of text – main body, 15 pages of bibliography and 156 pages of appendices. Its structure includes: introduction, four chapters, conclusion, contributions of the dissertation work, bibliography, publications of the author on the topic of the dissertation, appendices. The bibliography contains 162 titles, of which 98 sources are in Cyrillic and 64 are in Latin alphabet. It also included 7 appendices.

The dissertation contains 25 tables and 27 figures.

The public defence of the dissertation work will take place on October 14 at 10 a.m. at a meeting of a scientific jury composed of:

Internal members

1. Assoc. Prof. D. Sc. Lyuben Vladimirov Vitanov
2. Assoc. Prof. Dr Lyubka Krasteva Alexieva

External members

1. Prof. Dr Sashko Plachkov
2. Prof. D Sc. Neli Stoycheva Dimitrova
3. Assoc. Prof. Dr Diana Stoycheva Mitova

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## INTRODUCTION

Entrepreneurship is a phenomenon that has a strong impact on all spheres of socio-economic life. Its essence is not limited to its purely economic dimensions related to achieving growth and providing jobs. The qualities and skills necessary for the implementation of a successful entrepreneurial activity are of critical importance for the successful realization of each person in the modern dynamically developing society. Entrepreneurship is therefore seen in the wider context of the European Union (EU) concept of lifelong learning as a key competence, the development of which “can contribute to successful life in a knowledge society“ (Rec 2006/962/EC, p. 13). The way to achieve this competence is entrepreneurship education and training. Therefore, in the Entrepreneurship 2020 Action Plan (COM(2012) 795 final), the first area of immediate action is precisely entrepreneurship education and training, paying particular attention to its inclusion in primary and lower secondary schools.

At the national level, these goals are reflected in the two national strategies for lifelong learning for the periods 2008 – 2013 and 2014 – 2020, as well as in the Action Plan “Entrepreneurship 2020 – Bulgaria” adopted in accordance with the European document (2015). It places special emphasis on the need to develop the skills of primary and junior high school teachers for teaching entrepreneurship by upgrading the Cultural and Educational Area “Lifestyle and Technologies”.

With the entry into force of the Preschool and School Education (PSEA) in 2016, the competence approach in education and the related key competences, including initiative and entrepreneurship, was established. The subject of home and appliances at primary level, in which concepts from the field of economics, financial literacy and career guidance have already been introduced, has been transformed into technology and entrepreneurship. A new topic – “Professions and entrepreneurship” – has been identified, and a significant change has been made in the expected learning outcomes, which are now directly linked to the development of initiative and entrepreneurship as a key competence.

Despite these positive steps, the introduction of entrepreneurship as part of technological education in school also faces some serious challenges such as: a small share in the subject – only one of five global topics, the lack of a unified concept of the nature and goals of entrepreneurship education at school, the initial teacher education (ITE) and continuous professional development (CPD), the available teaching materials, the negative public attitudes towards entrepreneurship education, especially at primary level.

The challenges identified during the examination of the educational documentation in the process of creating educational content, as well as the feedback from teachers and other experts in the field of education, has incited the interest to this issue.

This doctoral dissertation researches the existing educational documentation and materials and proposes a syllabus, educational materials and didactic technology to compensate for the identified gaps. The purpose is to support the building of initiative and entrepreneurship by supplementing and expanding the curriculum in the general education subject of technology and entrepreneurship through the possibilities of the PSEA for extended and additional training, through interest-based activities or work on projects.

## **CHAPTER ONE. SCIENTIFIC AND THEORETICAL FOUNDATIONS OF ENTREPRENEURSHIP EDUCATION**

The first chapter of the doctoral dissertation examines the scientific and theoretical foundations of entrepreneurship education.

### **1.1. Entrepreneurship as a social and economic phenomenon**

The paragraph traces the historical development of the views on entrepreneurship and the characteristics of the entrepreneur, summarizing the narrow and broad understanding of entrepreneurship as a social and economic phenomenon and as a key competence. Some definitions of entrepreneurship are examined, with an emphasis on those adopted in the EU.

### **1.2. Nature of entrepreneurship education**

Concepts, models, approaches and methods of entrepreneurship education are presented in the paragraph. A comparison is made between different definitions of entrepreneurship education.

The understanding of entrepreneurship education as one aimed at developing an entrepreneurial way of thinking and entrepreneurial competence adopted is explained. The view of entrepreneurship as a key competence according to the European framework of key competences throughout life is fundamental (Rec 2018/C 189/01). This competence is built on knowledge of economics, finance and entrepreneurship. The opinion is advocated that the formation of entrepreneurial skills cannot be carried out without acquiring knowledge about the phenomena in socio-economic life. Therefore, entrepreneurship education should be based on the development of economic and financial literacy, as

well as skills and attitudes that are related to this knowledge not only in a business context, but also in life. The aim of entrepreneurship education for this age group is to lay the foundations for creating informed citizens who are proactive and taking the initiative in all aspects of their lives. Therefore, the introduction to the entrepreneurial process, which takes place in the form of hands-on activities and games, does not intend to make them entrepreneurs, but to support the development of their entrepreneurial mindset. Through the simulation of reality in the course of learning, young students gradually construct their understanding of the world around them and the essence of the processes and phenomena they encounter on a daily basis. On this basis, universal (transversal, soft) skills are built, which support the individual in his employment – whether as an entrepreneur with his own business or as a participant in the economic processes as a hired worker. The palette of these skills is extremely rich – initiative, proactivity, problem solving, creative and critical thinking, leadership, communication, cooperation, decision making. The accompanying development of digital and information and communication skills, financial literacy, civic awareness, etc. should not be neglected. However, it should be noted that even at this early age, entrepreneurship education manages to incite the sense of initiative and entrepreneurship of students, and based on the acquired knowledge and developed skills, they are able to generate ideas and even develop their business activity.

Due to the direct connection of entrepreneurship training with the achievement of certain levels of economic, entrepreneurial and financial literacy, the term *entrepreneurship education* is used in this work, and its main aim is the building of *entrepreneurial mindset*.

The specifics of learning about, for and through entrepreneurship are discussed, as well as the integration of entrepreneurship topics into other subjects and disciplines (Lackéus, 2015). Several models have been examined which reflect learning progress and frame the competencies associated with it (Welsh Government, 2012), (Davies, 2002), (Gibb, 2008), (Lindner, 2019), (Bacigalupo, Kampylis, Punie, & Van den Brande, 2016).

An overview of the main approaches to entrepreneurship education was made highlighting the philosophical foundations of the pedagogical theory on which they stand – progressive education, constructivism, experiential learning, project and problem-based learning, etc. (Lackéus, 2015). The importance of entrepreneurship education starting from the first school years is emphasized, as it is aimed at building qualities that require a long period of time (Tsanev, 2019). Vitanov's (2020) classification of approaches to entrepreneurship education for building knowledge, skills and attitudes, part of the sense of initiative and entrepreneurship as a key competence, was examined, in which he also gives examples

of their use in the daily pedagogical work. Methods of entrepreneurship education for the age group are proposed, being categorized according to the classification of Marin Andreev (1987):

1. Methods of oral communication – narrative, storytelling
2. Dialogic teaching methods – dialogue, discussion, guest speaker
3. Rational methods – work with the textbook and other books
4. Methods for researching reality – site visits, study tours, experiment, research
5. Methods for immediate indirect research – demonstration, modelling
6. Methods for practical activity – exercise, case study, project, brainstorming
7. Imitative methods – games, dramatization, simulation.

## **CHAPTER TWO. ENTREPRENEURSHIP EDUCATION AT PRIMARY SCHOOL LEVEL IN BULGARIA**

In the second chapter, entrepreneurship education in the Bulgarian school is examined. The paragraphs include a historical overview since 1990, the policy and legal framework for entrepreneurship education and the challenges it faces.

### **2.1. A brief overview of entrepreneurship education in Bulgaria after 1990**

In this paragraph, the introduction and promotion of entrepreneurship education in Bulgarian schools since the mid-90s of the 20<sup>th</sup> century has been traced historically.

The first step comes after the change of socio-economic conditions and is related to efforts to increase the economic culture of adolescents with priority to students in high school classes. Entrepreneurship training in elementary and junior high school entered Bulgarian schools much later. Its basis is the introduction of concepts from the field of economics and financial literacy within the framework of technological education, regulated by the State Educational Requirements (SER) in 2000 (Ordinance No. 2 of 18.05.2000). They become part of the syllabuses for several subjects in the Cultural and Educational Area called Life and Technologies, including the subject home and appliances (grades 1 – 4). The subject was chosen as the educational environment that provides the most favourable opportunities for building the foundations of economic literacy among students from an early age (Kavdanska, 2009).

Actual entrepreneurship education was introduced at primary school level in the mid-2000s in Bulgaria within the framework of a project of Junior Achievement Bulgaria Foundation for the translation and distribution of educational programmes, as well as provision of teacher training on delivering them. Entrepreneurship was taught in the hour of the class time, as an optional subject or interest activity clubs, as well as integrated into some topics of home and appliances (grades 1 – 4), homeland (grade 1), environment (grade 2), man and society (grades 3 & 4). However, the scope of the project remains limited, although it has incited interest among the teachers it has reached. After 2010, other organizations have also started to offer educational materials for primary students and teacher training, but compared to the initiatives for students at secondary school level they were significantly fewer in number (Delinesheva & Jolovski, 2021).

## **2.2. Policy framework for entrepreneurship education in Bulgarian schools**

The second paragraph examines the strategic documents determining the policy framework for entrepreneurship education in Bulgarian schools. A detailed review is made in UNICEF Bulgaria Mapping report of initiatives in Bulgaria for adolescent skills development through innovation social entrepreneurship and financial literacy (Delinesheva & Jolovski, 2021).

The introduction of entrepreneurship education in the Bulgarian school is closely related to the establishment of the competence approach and the concept of lifelong learning. It distinguishes two groups of competences – specific and key ones, “which all individuals need for personal fulfilment and development, active citizenship, social inclusion and employment” (Rec 2006/962/EC, p. 11). One of these competences is the sense of initiative and entrepreneurship, which: “refers to an individual's ability to turn ideas into action. It includes creativity, innovation and risk-taking, as well as the ability to plan and manage projects in order to achieve objectives. This supports individuals, not only in their everyday lives at home and in society, but also in the workplace” (Rec 2006/962/EC, p. 17) (Rec 2006/962/EC, p. 17).

For the first time in the Bulgarian education system, the need for entrepreneurship education is stated in the National Strategy for Lifelong Learning for the period 2008 – 2013, which promotes the integration of entrepreneurship in other subjects (2008). In implementation of the Strategy, the Ministry of Education, Youth and Science provides, through the Action Plan (2012) and the National Programme “Qualification” (2011) funding for the training of 600 primary teachers within 3 years (2010 – 2012).



A major role for promoting entrepreneurship and financial literacy education since 2011 have played the projects of the Ministry for supporting extracurricular activities – USPEH (2011 – 2015) (<http://uspeh.mon.bg/>), “Your Hour” (2015 – 2018) (<http://tvoiatchas.mon.bg/>), and interest-based activities (<https://class.mon.bg/>). Within these projects, additional funds are provided to schools for extracurricular activities, one of the thematic areas being entrepreneurship. However, there is no publicly available information about the teachers and students involved in the different types of activities, as well as about the mechanisms for measuring the acquired skills and knowledge. This is essential in order to assess the impact of and, accordingly, apply appropriate budgeting methods to future projects planning that will ensure that funding is tied to the achieved results.

The importance of entrepreneurship education is highlighted in the Action Plan “Entrepreneurship 2020 – Bulgaria” (2015), which places particular emphasis on the inclusion of entrepreneurship education in the primary and lower secondary school.

In February 2021, by Decision of the Council of Ministers, the National Strategy for Financial Literacy of the Republic of Bulgaria (2021) was adopted together with an Action Plan to it for the period 2021 – 2025 (2021). One of the main priorities of the Strategy is increasing the financial literacy of school and university students through the education system.

As of 2022, Bulgaria does not have a specific national strategy for entrepreneurship education. This is an indication that there is a lack of a clearly formulated state policy on entrepreneurship education. The lack of strategies means that there is no clearly formulated state policy on entrepreneurship and financial literacy education regarding their priorities, aims and objectives, specific measures to be implemented in formal, non-formal and informal education settings as well as the time frame to achieve them” (Delinesheva & Jolovski, 2021, p. 21).

### **2.3. Legal framework for entrepreneurship education in Bulgarian schools**

In the third paragraph, the legal framework for entrepreneurship education in the Bulgarian school is examined, highlighting the main provisions in each of the documents related to its regulation – the Preschool and School Education Act (PSEA, 2015) and the State Educational Standards (SES).

According to Art. 77, para. 1 of the PSEA, the central role for developing the sense of initiative and entrepreneurship as one of the key competences is assigned to the newly created general education subject of technologies and entrepreneurship, which “aims at acquiring skills to react to innovations

and take responsibility, building the ability of initiative and entrepreneurship” (PSEA, 2015). The specific aims of the subject are laid down in the SES for general education (Ordinance No. 5 of 30.11.2015), in which the learning outcomes of entrepreneurship training are specified in the competence area “Initiative and Entrepreneurship”. At the same time, the SES states that the development of “critical thinking, problem-solving, decision-making, initiative, creativity, taking responsibility, teamwork” should be encouraged in all subjects (Ordinance No. 5 of 30.11.2015) – competences that are part of initiative and entrepreneurship.

In addition to technologies and entrepreneurship and activities embedded in other subjects, the key competence of initiative and entrepreneurship can also be developed in class through activities and projects on topics related to career guidance. For the construction of initiative and entrepreneurship within the class hour, Vitanov (2020, p. 164) offers “a complex of 9 knowledge, skills and attitudes that make it possible to plan a system of topics, tasks and activities for effective teaching and learning in initiative and entrepreneurship, career guidance in the classroom”.

Another form in which entrepreneurship training can be carried out within school time is its inclusion as an interest activity in the all-day organization of school time, which should be reflected in the school curriculum (Ordinance No. 10 of 01.09.2016). An additional opportunity is provided in the same Ordinance with the stipulated time of five school days for grades 1 to 3 to be used for projects and creative activities according to the curriculum.

Entrepreneurship training can also be a part of innovation – launched new teaching methods, newly developed learning content, curricula and plans (Ordinance No. 9 of 19.08.2016). This is the most significant opportunity for a full-fledged introduction of entrepreneurship education, since the PSEA and SES give extremely great freedom to innovative schools in the choice of subjects and the organization of the educational process.

## **2.4. Challenges to entrepreneurship education**

The fourth paragraph examines the challenges to entrepreneurship education summarized in several groups.

Firstly, the challenges related to the *organization and content of entrepreneurship education* as part of the subject technologies and entrepreneurship are analysed. The goals and expected results of the subject laid down in the SES on general education are reviewed, which are aimed at developing the key competence sense of initiative and entrepreneurship – building basic knowledge, skills and

relationships related to contemporary economic life, understanding the importance of different professions and the need for leaders of the community, fostering initiative, entrepreneurship and responsibility and building a positive attitude to work, conservation of natural resources and environmentally friendly behaviour. In the competence area “Professions and entrepreneurship”, students are expected to develop knowledge, skills and attitudes in order to understand the meaning of basic economic concepts such as: *job, income, expenses, profession, salary, family budget, good, service, etc.* and to connect the production of goods and services with the satisfaction of personal and public needs (Ordinance No. 5 of 30.11.2015).

The technologies and entrepreneurship syllabuses for grades 1 to 4 (2015), (2016), (2017a) (2017b) define the competence areas to be achieved at the end of each grade. One of them is “Initiative and Entrepreneurship”. The content is organized into five global topics, including the new one “Careers and Entrepreneurship”, covering topics in economics, financial literacy and professions. The change of the subject name and the formulated goals in the SES and the syllabuses, as well as the thematic scope, give a clear indication that the policies and legal framework for school education take into account the importance of the key competence sense of initiative and entrepreneurship.

In fact, the share of entrepreneurship in the general content of the subject is very limited – only one of five global topics and between 5 and 8 hours for the entire school year in the different textbooks, which represents between 14.7% and 23.5% of the hours for the subject. The subject itself is taught only 1 hour per week in grades 1 to 4, which is only 4.3% of the total teaching time in grades 1 and 2, and 3.7% in grades 3 and 4. Taking into consideration the fact that entrepreneurship classes are between 0.6% and 0.8% of the total number of hours at primary level, some concerns arise as to whether this class time is sufficient to develop the sense of initiative and entrepreneurship as a key competence.

Due to the limited share of the topic “Professions and Entrepreneurship”, some important concepts and topics necessary for building the skills part of the entrepreneurship competence remain outside the syllabuses, and those included are not sufficiently represented. This is evident from the formulated learning outcomes, which are mainly related to the first cognitive levels according to Bloom's taxonomy (1956). Thus, out of 25 competences included as learning outcomes for the topic “Professions and Entrepreneurship” in the syllabuses for grades 1 to 4, 12 are formulated with verbs that correspond to the first level of the cognitive domain – *knowledge* (one of the outcomes contains two verbs), 9 – to the second – *understanding*, and 3 – to the third – *analysis*. It is striking that there are no learning outcomes at cognitive levels, intrinsic to entrepreneurship education, such as

*application* – related to using the acquired knowledge in new situations, *synthesis* –to the development of new ideas, and *evaluation* – to the formulation of well-founded opinions and conclusions.

However, the most serious problem with the content of entrepreneurship education remains the lack of a unified theoretical and methodological justification regarding its content and aims in the school education system – a task that should be solved with a national strategy for entrepreneurship education in the entire education system, tailored to the specifics of each level and ensuring a spiral approach to the curriculum. One of the main reasons for the lack of a strategy is the sporadic nature of scientific research in Bulgaria on the topic. As a result, the educational documentation has not been developed on solid ground.

Research on entrepreneurship education at primary level in Bulgaria is limited and mainly in the context of technological education. Apart from Kavdanska, (2009) whose work is mainly focused on the introduction of economic education at primary level through the former subject of home and appliances, Bozhkova (2007) also works on the topic exploring the possibilities of combining technology and entrepreneurship education for this age group.

It is promising that after the entry into force of the PSEA and the introduction of the new subject technologies and entrepreneurship, there are already scientific works in which serious attention is paid to entrepreneurship education at primary level. Tsanev (2019) examines some characteristics of the entrepreneurship lesson. He distinguishes it as a separate type with its specific activities and calls it: “a lesson in economics” (Tsanev, 2019, p. 150). Vitanov (2022) describes in a separate section the characteristics of entrepreneurship education within the framework of technologies and entrepreneurship, examining all topics included in the syllabuses. He pays special attention to the learning outcomes directly related to developing the sense of initiative and entrepreneurship and personal qualities such as: “self-respect, self-confidence, striving for self-assertion and success” (Vitanov, 2022, p. 178).

The paragraph also presents a mapping of the learning outcomes of entrepreneurship education included in the SES and the syllabuses for the general subject technologies and entrepreneurship for grades 1 to 4. The findings show that there are certain discrepancies and inconsistencies, which reflect on the scope, depth and relevance of the educational content. The missing competencies and concepts that are not included in the syllabuses but are critical to the relevant topic and/or are present in the expected results are also pointed out. The following conclusions can be drawn from the mapping exercise:

- Some key concepts are not included although they are contained in the formulations of the learning outcomes, e.g.: *job, profession, salary, needs and wants, saving, donation (charity), entrepreneur, innovation, money flow (circular flow of money, resources, goods and services)*;
- Some concepts fundamental for entrepreneurship as an economic category and as a key competence are missing and there are no learning outcomes related to them, e.g.: *innovation, risk, profit, value*;
- The spiral approach is best illustrated in the topic of professions, but there are also some weaknesses – *profession* as a concept is not included in the syllabus and there is a certain discrepancy between the knowledge, skills and attitudes targeted in the SES and the syllabuses, as well as in the syllabuses themselves;
- There are concepts that are not tied to learning outcomes. For example, the concepts provided in the syllabuses for grades 1 and 2 are exclusively from the field of financial literacy, but no competences are specified for them;
- There are learning outcomes in the SES that are not decomposed in the syllabuses;
- The learning outcomes in the SES are too generally formulated and are at a different cognitive level compared to those thematically related to them in the syllabuses;
- The learning outcomes linked to concepts such as *producer, consumer, production, public needs, tax, bank*, are formulated through the economic perspective, and not so much according to their role in the entrepreneurial process;
- A positive aspect is the inclusion of basic concepts of financial literacy as part of the entrepreneurship competence with an emphasis on personal finance – *money, price, personal and family budget, income, expenses*.

The second main group of challenges is related to *teacher training*. The lack of a unified theoretical and methodological rationale for entrepreneurship education at every level of the education system also affects the initial teacher education and continuous professional development. Until the entry into force of the PSEA, the training of teachers was carried out only by non-governmental organizations and was mainly related to the use of the materials offered by them.

With the integration of entrepreneurship in the new subject, the need for training of primary-level teachers, especially those who have not completed a course on the methodology of entrepreneurship education in their university programme, has come on the agenda. The introduction of the subject found the education system without qualified teachers with sufficient knowledge and/or experience in

teaching entrepreneurship. A relatively small proportion of primary-level teachers have experience that is mainly gained through working on various projects and is related to teaching specific content rather than based on a systematized academically acquired knowledge of the nature and content of entrepreneurship education at this level.

After 2015, some higher education institutions began to offer bachelor's or master's programmes related to qualifications in technology and entrepreneurship. However, the interest in them is limited. Despite the obvious need to increase the knowledge and skills of primary school teachers in the field of entrepreneurship, this problem remains neglected by both school leaders and teachers, and entrepreneurship is still not perceived as an essential element of the subject.

According to the SES on the status and professional development of teachers, principals and other pedagogical specialists (Ordinance No. 15 of 22.07.2019), the professional development of teachers qualifications is provided through programs offered by university departments or other training organizations entered in the Information register of approved programmes for raising the qualification of pedagogical specialists (IROPK) (<https://rq.mon.bg/home>), supported by the Ministry of Education and Culture. As of April 2022, out of 39 programmes related to some degree to the development of pedagogical competence in building the sense of initiative and entrepreneurship, 10 are intended for primary level teachers. Since no monitoring has been carried out since the introduction of IROPK – and there is no stated intention to do so on the part of the Ministry of Education and Science, it is not clear what the status of these programmes is, how many people have been trained in them and how many of them teach entrepreneurship in some form.

The aforementioned problems related to teacher training raise the question of the extent to which teachers who currently teach technology and entrepreneurship have the necessary training and skills to do so.

The third group of challenges is related to *entrepreneurship teaching materials*. After the entry into force of the PSEA, there are sufficient options of textbooks on technologies and entrepreneurship of four publishers, but there are significant differences in the number of hours set for the topic “Professions and Entrepreneurship” as well as in the interpretation of concepts. For some, there is also an obvious shift in focus from economic concepts to the training of technological skills, bringing it closer to the topics of home and appliances.

In addition to the textbooks for general education approved by the Ministry of Education and Science, several non-governmental organizations offer educational materials on entrepreneurship and financial literacy. They are mainly translated and distributed within specific projects. Initially provided

for free after completed training, some of them are subsequently offered for sale (Delinesheva & Jolovski, 2021).

The paragraph also discusses some *challenges related to public attitudes towards entrepreneurship education*. The reasons for the transformation of the subject of home and appliances into technologies and entrepreneurship remain unclear for a large part of society and the education system itself. This is largely due to the fact that the Ministry of Education has not managed to explain clearly what the changes envisaged by the PSEA are – not only in relation to this subject, what makes them necessary and what is their expected impact. In addition, these vague messages are reflected in the media with numerous inaccuracies and loose interpretations. Other factors are the traditionally prevailing negative attitudes in society regarding any change in the education system, as well as the prevailing stereotypes about entrepreneurship.

The following conclusions can be drawn from the brief overview of the development and current state of entrepreneurship education in secondary school and more specifically at the primary level:

- The introduction of entrepreneurship as part of general education has become possible due to the long-term efforts of the non-governmental sector and individual educational institutions within the framework of international initiatives and projects.
- Entrepreneurship is only part of a subject with a small share in terms of content and number of hours, insufficient for building initiative and entrepreneurship. It can be compensated partially with additional activities through the possibilities provided in the PSEA. This depends on the priorities of the school, its financial resources, the preparation and willingness of the teachers, as well as the availability of appropriate teaching materials.
- There is no unified theoretical and methodological rationale for the nature and aims of entrepreneurship education, reflected in the educational documentation and, accordingly, in the educational content of the available textbooks for the initial stage.
- Most primary teachers of technologies and entrepreneurship have not received any form of preparation for teaching entrepreneurship, which affects the effectiveness of teaching.
- Despite the existence of university bachelor's and master's degree programmes in the methodology of teaching technologies and entrepreneurship or for acquiring additional qualification, as well as for continuous professional development of primary teachers, provided by other training organizations, the interest in them is low.
- The activities of non-governmental organizations, which have played a significant role in

introducing entrepreneurship education at primary level, remains limited in scope in terms of teacher training and dissemination of educational materials.

- Most educational materials on entrepreneurship of non-governmental organizations are translations and do not reflect the Bulgarian reality; they are mainly provided within projects; some of the materials are morally outdated.
- Entrepreneurship education for this age group is a new topic for both the education system and society and is often perceived negatively as there is a lack of understanding of its nature and benefits.

## **CHAPTER THREE. DEVELOPMENT AND TESTING OF A DIDACTIC TECHNOLOGY FOR BUILDING THE SENSE OF INITIATIVE AND ENTREPRENEURSHIP AT PRIMARY SCHOOL LEVEL**

The third chapter includes the methodological characteristics of the study and the employed research methods, the conceptual framework of the developed didactic technology and a description of the conducted research.

### **3.1. Methodological characteristics of the study**

This paragraph presents the methodological characteristics of the study. The results of the preliminary survey, the literature review and the content analysis of the educational documentation confirm the relevance of the problem arising from the limited opportunities for the development of initiative and entrepreneurship within the compulsory school hours at primary level.

Based on that, the following object, subject, aim, objectives and hypothesis of the study are formulated:

*The object* of the study is the development of the sense of initiative and entrepreneurship through entrepreneurship education at primary level within the general education subject technologies and entrepreneurship and through elective activities.

*The subject* of the study is the impact of the didactic technology designed by the author for developing the sense of initiative and entrepreneurship of primary students through elective activities (elective and optional subjects, including extracurricular forms and interest-based activities).



*The aim* of the study is to establish the effectiveness of the designed didactic technology for developing the sense of initiative and entrepreneurship through elective activities.

To achieve this aim, the following *objectives* have been identified:

- To study and analyse the theoretical foundations of entrepreneurship education at primary school level in different countries;
- To study and analyse the spreading of entrepreneurship education at primary level in Bulgaria before and after the adoption of the PSEA;
- To analyse the policies for entrepreneurship education, incl. financial literacy in Bulgaria;
- To analyse the educational documentation related to technologies and entrepreneurship – legal framework, state educational standards, syllabuses – nature, content, aims and learning outcomes;
- To define the nature and content of entrepreneurship education at primary level, by mapping its goals and expected results, laid down in the SES and the syllabuses for technologies and entrepreneurship against the European Entrepreneurship Competence Framework (EntreComp) in order to outline the necessary knowledge, skills and attitudes for the age group;
- To conduct a survey of the opinion of teachers regarding the effect of elective activities in entrepreneurship for building the sense of initiative and entrepreneurship;
- To develop and test educational content for elective/optional subjects or interest-based activities, building upon the general education subject technologies and entrepreneurship in grade 4;
- To develop a teacher training programme on the nature and aims of entrepreneurship education at primary level and its methodological aspects;
- To establish the level of acquired knowledge and skills from technologies and entrepreneurship in grades 1 – 3 by conducting an ascertaining experiment;
- To develop and test a didactic technology for building the sense of initiative and entrepreneurship through elective activities to enhance and complement the general education subject technologies and entrepreneurship by conducting a formative experiment;
- To create a toolkit for establishing the level of knowledge and skills acquired by students by introducing a system of criteria and indicators;
- To study and analyse the effect of the didactic technology by conducting a final

experiment.

**Hypothesis:** It is assumed that the application of an author's didactic technology for entrepreneurship education through the experiential learning approach, developed on the basis of the author's syllabus, consistent with the European Entrepreneurship Competence Framework and author's educational materials in the form of a narrative text and worksheets, will contribute to the development of the key competence of initiative and entrepreneurship among students 4-grade students and will help teachers enhance their pedagogical competences.

### **3.2. Research methods of the study**

The stages, contingent and methods of the study are presented in the second paragraph of Chapter Three.

The study was carried out in the following **stages**:

- Stage I: July 2018 – July 2019 – review of the literature, European and national policies and good practices, related to research problem;
- Stage II: April – July 2019 – conducting a survey on the opinion and attitude of primary teachers towards entrepreneurship education;
- Stage III: July – September 2019 – survey data processing and analysis of the findings;
- Stage IV: June 2019 – February 2020 – creating a didactic technology for entrepreneurship training as an interest-based activity; development of educational materials in entrepreneurship for grade 3; creating a training programme and conducting training for primary teachers;
- Stage V: July – October 2020 – revision of the educational materials to be adapted for grade 4. Due to the Covid-19 epidemiological situation the implementation of the pedagogical experiment has been postponed for the 2020-2021 school year. This has required the revision of the teaching materials to be used by the trained teachers in the next school year;
- Stage VI: February – June 2021 – conducting an ascertaining experiment to establish the entry level of the experimental and control groups; conducting a formative experiment – training; conducting a final experiment to establish the exit level; carrying out an expert assessment;
- Stage VII: June 2021 – data processing and analysis of findings; conclusions and

recommendations.

The **contingent** of the study covers the participants in a survey, a pedagogical experiment and an expert assessment.

In the preparation of the study, a *survey* was conducted on the attitudes of primary teachers about entrepreneurship education in extended/additional training or interests.

For the purpose of the study, during the second academic term of the 2020-2021 school year, a *pedagogical experiment* was conducted – ascertaining, formative and concluding, with 204 students of the grade 4 from 8 schools in the country. The experimental group consists of 101 students and the control group of 103 students.

In June 2021, an *expert assessment* was conducted with 49 experts, divided into three groups – teachers who participated in the experiment; primary teachers and teachers of economic subjects and entrepreneurship at upper secondary level; university lecturers of economic and pedagogical disciplines.

The following **research methods** were used in the study:

- Review and analysis of scientific literature, European and national policies and good practices related to the research problem;
- Content analysis of the educational documentation, regulating entrepreneurship education at primary level;
- Survey of teachers on their attitudes towards entrepreneurship education through elective activities;
- Pedagogical experiment to test the didactic technology for entrepreneurship education through elective activities in grade 4;
- Expert assessment conducted with primary teachers, teachers of economic subjects and entrepreneurship at upper secondary level and university lecturers of economic and pedagogical disciplines;
  - Mathematical and statistical methods for processing the obtained data;
  - Methods of graphical representation of the obtained data through tables, charts and figures.

The effectiveness of the experimental training programme was assessed by applying a system of criteria and indicators. An analysis of scientific research (Gunko, 2011; Gospodinov, 1995; Teneva, 2016, Andreev, 1995) on various aspects of effectiveness as a pedagogical category was made. The

system is based on the criteria for effectiveness summarised by Tsanev (2022, p. 79) as follows: “the amount of knowledge, systematicity (the internal logic of the studies objects or phenomena), meaningfulness (ability to understand the dependencies, connections and paths to obtain information), durability and effectiveness (applicability).”

The most serious challenge in defining criteria and indicators is the lack of reliable, objective and comparable criteria for assessing entrepreneurship education (Eurydice Report, 2016). Difficulties arise from different understandings of the nature of entrepreneurship, approaches to learning (for, about and through entrepreneurship) and, accordingly, its aims for different age groups, which differ significantly – from the development of the sense of entrepreneurship and initiative (or entrepreneurship) as a competence to narrowly specialized business skills. Another difficulty is related to the fact that even with clear criteria, there is always an element of subjectivity, and the assessment depends on the judgment of the assessor.

When determining the system of criteria and indicators for assessing the effectiveness of the experimental training, the learning outcomes for the global topic “Professions and Entrepreneurship” of technologies and entrepreneurship in grades 1 – 4 were also taken into account.

It should be noted that due to the unfavourable environment for conducting the experiment as a result of the declared Covid-19 emergency and subsequently the epidemic situation, which significantly affected the possibilities for intervention in the classroom, the planned observation as one of the research methods focused on teamwork skills had to be cancelled. Although teamwork is one of the most important criteria for the entrepreneurship competence, due to these circumstances it was not included in the assessment of the experimental training results.

The developed system of criteria and indicators assesses basic knowledge and skills related to the entrepreneurship competence, which are relevant for the age group (Table 1).

*Table 1. A system of criteria and indicators for evaluating knowledge, skills and attitudes related to entrepreneurial competence*

Criteria	Indicators
1. Knowledge in the field of economics, entrepreneurship and finance	I1.1. Knowledge of basic concepts and processes I1.2. Distinguishing between concepts and processes

2. Skills for transfer of knowledge to new contexts	I2.1. Understanding the relationship between concepts and processes I2.2. Application of knowledge in a specific situation
3. Skills for creative and innovative thinking	I3.1. Proposing solutions to problems I3.2. Identifying opportunities for value creation
4. Resource management skills	I4.1. Planning activities or resources I4.2. Budgeting

During the preparation of the study, its **toolkit** was developed, including all materials necessary for its implementation (Bizhkov & Kraevski, 2002, p. 165). To implement the experimental training, the following author's materials have been created:

- Syllabus in entrepreneurship as an elective or optional subjects or interest-based activities in grade 4;
- Course materials in entrepreneurship including a book “Small Stories about Entrepreneurs or Stories about Small Entrepreneurs” and accompanying worksheets;
- Methodological guidelines for using the developed course materials in entrepreneurship for grade 4;
- Pre- and post-assessment tests.

In February 2020, training was held with the teachers participating in the experiment, during which they were introduced to the aims of the study, the developed educational, assessment and methodical materials, the guidelines how to be used and the organisation of the pre- and post-assessment testing. However, as a result of the declared state of emergency in March 2020 and the epidemic situation in 2021, it was necessary to revise the teaching materials and, accordingly, the assessment tools due to the postponement of the experiment, as well as re-conducting the training in February 2021 in an online version.

Further in the paragraph, the elements of the toolkit are discussed in detail.

The experimental *syllabus in entrepreneurship* as an elective or optional subject or interest-based activity in grade 4 complements the technologies and entrepreneurship syllabuses for primary level and contributes to the building of stable awareness about the economy, business and community life and develops practical skills.

The topics in the syllabus are aimed at forming initial economic literacy and are related to real entrepreneurial activity in areas such as management, marketing, finance, accounting.

The learning content covers five global topics: “Professions”, “Entrepreneurs and the Business”, “Business idea”, “Business Model”, including sub-topics on marketing, finance, resources and production process, pitching.

In order to determine the expected results and the concepts in the curriculum, the mapping of the competences in the DOS and the curricula of technology and entrepreneurship for 1st - 4th grade has been supplemented with the Entrepreneurial Competence Framework – EntreComp (Bacigalupo, Kamylyis, Punie, & Van den Brande, 2016). Its purpose is to establish areas of competence that can supplement and expand the topics and concepts included in the SES and curricula in order to achieve a more complete and effective development of initiative and entrepreneurship (entrepreneurship). Competencies were selected on this basis and formulated according to Bloom's revised taxonomy by Anderson and Krathwohl (Anderson & Krathwohl, 2001). Tsanev's (2019) classification has been used to categorize the types of lessons – for acquiring new information, for enhancing and transferring knowledge and skills, for application of knowledge and skills, for review and for assessment.

The *course materials in entrepreneurship* for primary level include the *book* “Small Stories for Entrepreneurs or Stories for Small Entrepreneurs” and accompanying *worksheets*. They were developed according to the author's syllabus in entrepreneurship for the grade 4. The book contains 10 chapters interpreting the topics in the syllabus. The main topics and new concepts are presented in the book in the form of a narrative text. The worksheets for each chapter are intended to enhance the new knowledge obtained from the respective chapter.

After completing the course, the students have the opportunity to apply the acquired knowledge and hone their skills by *working on a project* to generate their own idea for entrepreneurial activity and develop a business model for it.

The *methodological guidelines* for using the course materials in entrepreneurship include an information basis for the tools used for generating ideas, developing a business model and budgets. The steps in the didactic technology are explained, with instructions given for the teaching methods used in each of them, as well as the activities of the teacher and the student. The definitions of the new concepts used in the text of the book are given.

Each of the chapters includes a detailed description of the activities with answers and sample questions for the discussions. Where necessary, additional information on the topic is provided, which the teacher can use at their discretion.

The *pre- and post-assessment tests* contain a different number of questions assessing the specified criteria and indicators. A maximum of 10 points is awarded for each of the indicators, and the total score for the test is 80 points. The test items are multiple-choice and free-response questions, which can be short or extended. Answers are weighted differently depending on the assessed cognitive level according to Anderson and Kratwall (2001).

The level of the acquired knowledge, skills and attitudes – part of the key competence of initiative and entrepreneurship, as a result of the instruction in grades 1 – 3, is established with a *pre-assessment test*. The questions in it are aligned with the SES for general educational in its part for technologies and entrepreneurship and more specifically – the knowledge, skills and attitudes as learning outcomes at the end of primary level in the competence area “Initiative and Entrepreneurship”, as well as with the syllabuses in technologies and entrepreneurship for grades 1 – 3.

The results from the experimental instruction are verified according to the defined criteria with the *post-assessment test*. The aim is to establish the effectiveness of the experimental didactic technology. At the same time, it also assesses the extent to which the learning outcomes including the competences in the syllabus for technology and entrepreneurship for grade 4 are achieved.

The limit of 50% was adopted as the *threshold of success* of the experimental training, which is consistent with the international experience (Andreev, 1987), the structure and content of the tests, the nature of the curriculum and materials, the experience of the teachers in teaching entrepreneurship, as well as the external conditions for conducting the experiment.

### **3.3. Development of a didactic technology for building the sense of initiative and entrepreneurship at primary school level**

The paragraph presents the conceptual framework of the developed didactic technology for the development of initiative and entrepreneurship by upgrading the instruction in technologies and entrepreneurship with elective activities – interests-based activities, elective or optional subjects related to entrepreneurship.

The developed technology is based on the experiential learning theory of Kolb (1984), who built on the works of Kurt Lewin, John Dewey and Jean Piaget. It includes two levels: a four-stage learning cycle and four distinct learning styles. The developed didactic technology follows the basic principles of Kolb's theory – concrete experience, reflective observation, abstract conceptualization and active experimentation.

The methods for implementing the didactic technology for building initiative and entrepreneurship have been selected in view of the specifics of entrepreneurship education in order to ensure its effectiveness. They are interactive and primarily oriented to placing the student in an active position, promoting his independent learning and internal motivation, interaction with other students and promoting mutual assistance, self-evaluation. It is through interactive methods that students develop important personal qualities that are part of entrepreneurial competence, such as: “organization, responsibility, fidelity, integrity, interest, tolerance, leadership, and as communication skills, teamwork, self-control and self-analysis. ... Systematic use of interactive methods contribute to the formation of skills transfer acquired in classes technological knowledge training in different life situations” (Dimitrova, 2015, p. 33).

Each chapter presents in the form of a narrative the main topics and the new concepts included in the syllabus. The aim is to encourage the students to explore and discover their meaning on their own directly through the eyes of the characters. A central place in the story is occupied by the conversations between the children and their parents and relatives, through which they get to know different sides of the business.

The activities for learning the new concepts presented in the book use various reading and discussion techniques.

The acquisition of new concepts independent work with the book new concepts are acquired is achieved mainly through. Depending on the level of students' learning skills the teacher may use as an alternative method the flipped classroom – independent reading in advance and a discussion in class on the content and new concepts.

The independent work with a book is the basis of mastering new information. As an alternative method at the discretion of the teacher and depending on the level of students' learning skills, a flipped classroom can be used - independent familiarization with the text in advance and conducting a discussion in class on the content and new concepts.

Methods such as work with a book, discussion, storytelling, reflection are used. Speed reading techniques such as skimming (looking for the general ideas) and scanning (looking for specific information or details). (Maxwell, 1972-73). The materials are suitable for consolidating already acquired knowledge and skills in technology and entrepreneurship and upgrading them with important topics and concepts from the field of economics, financial literacy and entrepreneurship.



which is achieved by using reading techniques such as skimming (looking for the general ideas) and scanning (looking for specific information or details).

Through the activities, students' creative thinking and the building of knowledge, skills and attitudes, part of initiative and entrepreneurship (entrepreneurship) are encouraged. An important feature is its connection with other key competences and implementation of interdisciplinary connections, with the main emphasis being placed on Bulgarian language and mathematics in order to develop the students' functional literacy.

To achieve the learning outcome in the syllabus, the proposed activities are implemented through approaches such as experiential learning, learning by doing, teamwork and flipped classroom. Methods such as working with a book, conversation, storytelling, reflection are used. Speed reading techniques are used to understand the main meaning “skimming” and to look for key moments or details “scanning” (Maxwell, 1972-73). Through the activities, students' creative thinking and the building of knowledge, skills and attitudes, part of initiative and entrepreneurship (entrepreneurship) are encouraged. An important feature is its connection with other key competences and implementation of inter-subject connections, with the greatest emphasis being placed on Bulgarian language and literature and mathematics with the aim of developing students' functional literacy.

The activities envisaged are based on popular tools used in entrepreneurial activity such as the business model canvas (Osterwalder & Pigneur., 2010) and the brainstorming technique SCAMPER (Eberle, 1996) as well as typical business functions – creating advertising, researching needs , drawing up a cost budget and a sales budget, determining a breakeven point .

The proposed didactic technology is implemented in the following steps.

1. Acquiring new knowledge

The activities for acquiring the new learning information presented through the text of the book “Small stories for entrepreneurs” are related to the application of various reading and discussion techniques. The new concepts in each chapter as well as the learning outcomes are presented in the guidelines for the worksheets.

2. Updating of knowledge/ motivation

The activities on the next steps of the technology are based on the worksheets. They are performed in the next class. The first assignment in the worksheet for each chapter contains test questions to quickly check understanding of introduced concepts and history facts that have a direct

relationship to the main topic of the chapter. The questions aim to update the knowledge presented in the relevant chapter. If necessary, students are encouraged to look up the answers again in the text.

The test questions serve as a starting point for a short discussion before proceeding to the specific questions in the second task. Emphasis is placed on new concepts and how they are presented in the text. The goal is for students to independently formulate an answer and/or express an opinion that they support with sentences from the text or arguments. Volunteers are given the opportunity to share their reflection from their personal Entrepreneurial Diary (after the first class), which helps consolidate and build on the acquired knowledge, as well as develop students' skills to express their thoughts clearly and precisely.

The third task is for teamwork and occupies a central place in the didactic technology, as it combines the transfer of knowledge and skills for creative solving of a specific problem. During work, team members distribute tasks among themselves depending on the nature of the specific activity.

The fourth task is presentation of the results of each team's work. Participation of all team members in the presentation is encouraged. Finally, a summarizing talk is given.

The fifth task is for individual reflection. The goal is for the student to rethink the topic and complete the story by making a connection with their own experience.

The main steps, activities and methods in the didactic technology are presented in Table 2. The elements of technology are presented according to the model for didactic technology using interactive methods (Dimitrova, 2015, p. 29).

*Table 2. Didactic technology for entrepreneurship education*

Elements of the Process	Method	Means	Teacher Activity	Student Activity
Acquiring new knowledge	Working with a book	Book	Gives reading instructions - skimming and scanning	Reads the text Summarizes the main meaning
	Scanning Discussion Talk	Book	Asks questions about the text and new concepts	Searches for specific information in the text Answers questions
Knowledge update/motivation	Test questions	Worksheet	Gives instructions for doing the test	Does a test Answers questions

			Asks questions on the test	
	Discussion	Worksheet	Ask questions on the text of the chapter Guides the discussion	Answers questions Looks for information in the text Expresses an opinion
Team work	Exercise	Worksheet	Facilitates the work of the teams	Works in a team on the task
Presentation of the results of teamwork	Create a presentation	Oral presentation Visual materials	Gives feedback on the performance of each team	Prepares and presents the results of the team's work
Reflection	Reflective discussion Reflective writing task	Diary	Guides the discussion	Answers questions Presents

### 3.4. Conducting the research

The next paragraph describes the activities related to conducting the preliminary survey, the pedagogical experiment and the expert evaluation.

The **survey** was conducted online in the period April – May 2019. Its aim is to establish the attitudes of primary teachers towards entrepreneurship education and the opportunities that extended and additional training, project work and interest-based activities (referred to in the survey as “electives activities”) provide for the development of the key competence of initiative and entrepreneurship.

The survey is partially standardized with several types of questions – closed with a possible choice of only one answer from several specified options; five-point scale and open-ended questions. The questionnaire contains 50 questions structured in 6 sections:

- A. Technologies and entrepreneurship as a subject of general education
- B. Entrepreneurship training at primary level
- C. Experience with elective activities in entrepreneurship
- D. Impact of elective activities in entrepreneurship on students
- E. Forms of elective activities in entrepreneurship and study materials
- F. Demographics

The results of the survey and the theoretical analysis were taken into account in the development of the syllabus, teaching materials and didactic technology for the implementation of the **pedagogical experiment** – ascertaining, formative and concluding.

*The ascertaining experiment* was conducted through an input diagnostic test with the experimental and control group of schools in the period March 4 – 11, 2021.

One of the tasks of *the formative experiment* is to check the possibilities of implementing entrepreneurship education in elective and optional classes, interests-based activities or project work. For this reason, it was held in a different form and with the participation of both whole grades and groups of students in all-day organization of the school day in schools. The number of classes/activities in school time is preserved regardless of the format.

The final experiment was conducted through a test with the experimental and control group of schools in the period June 1 – 5, 2021.

The **expert evaluation** method was used to evaluate the syllabus, learning materials and didactic technology. It was held online in June 2021, and the experts were provided with all developed materials aiming at evaluating:

1. The selected approach in determining the topics and concepts in the syllabus
2. The significance of the included topics and concepts for building a basic understanding of the essence of entrepreneurial activity
3. The presentation of topics and concepts according to the age group
4. The effectiveness of the methods and techniques used
5. The combination of used methods and techniques
6. The approach to the development of the business model according to the age group
7. Effectiveness of the implemented interdisciplinary connections
8. Applicability of didactic technology to the age group
9. The accessibility of study materials
10. The content of the Methodical guidelines for the teacher
11. The appropriate form for conducting the training

## **CHAPTER FOUR. ANALYSIS OF THE RESULTS**

In this chapter, an analysis of the results of the conducted studies is made, and each of them is considered separately.

#### 4.1. Analysis of the results of the preliminary survey

In the first paragraph, the results of the survey are presented and analysed. 76 respondents from all over the country took part in it according to the method of responding, distributed as follows:

- by gender: 72 women and 4 men
- by age: 25 – 29 years – 3 people, 30 – 39 years - 10, 40 – 49 years – 23 people, 50 – 59 years – 37 people, over 60 years – 3 people
- on a territorial basis: capital – 9; regional cities – 42; municipal center – 14; small town – 9; village – 2;
- by educational degree: 58 with a master's degree, 14 with a bachelor's degree, 3 with a professional bachelor's degree, 1 with a teacher's license;
- by teaching experience: 64% with more than 20 years;
- by position: principals – 2, deputy principals – 2, head teachers – 8, senior teachers – 48, teachers – 9, head educator – 1, senior educators – 5, educator – 1.

The sample covers respondents with different demographic characteristics and from different types of settlements, and in this sense largely reflects the profile of elementary teachers in the country – a predominant number of women, higher age categories and, accordingly, greater teaching experience and high educational level qualification.

With the help of the SPSS specialized statistical package, an analysis of frequency distributions (one-dimensional and two-dimensional), numerical characteristics, hypothesis testing, dependence research was performed. For the *one-dimensional analysis*, the six groups of questions, combined according to the stated tasks of the study, were considered. For the two-dimensional analysis, cross tabulations were prepared and the  $\chi^2$  criterion of independence was applied. Causal-type dependencies between the questions in the survey, for which there are logical reasons to look for such and meet the formal requirements for the test, have been investigated. It was found that there is no statistical relationship between the experience of teachers in elective activities on entrepreneurship and their opinion about the appropriate forms of teaching it at the primary stage.

Based on the survey findings, it can be maintained that extracurricular /interested-based activities have a key place in implementing additional entrepreneurship education at school. They also have a positive influence on the introduction of entrepreneurship as a compulsory subject in grade 1. The elective activities can compensate for the insufficient number of hours, as well as the limited content included in the topic “Professions and Entrepreneurship”. However, the choice of such activities

depends on the perceived need for more extensive entrepreneurship education and the benefits it brings to students, teachers and the school, the willingness of the teachers and the decision of the school management.

Government-funded initiatives have an essential role to play in promoting extra-curricular activities and including entrepreneurship as an option in them.

The results of the survey also show that a greater proportion of teachers are willing to include such activities in their work because they believe that they are useful both for the students and for themselves. But they highlight some problems that prevent this, such as insufficient preparation on the subject and lack of sufficient study time. Teachers have an understanding of the goals and scope of entrepreneurship education at the initial stage – namely the development of life and personal competences. According to them, entrepreneurship education in optional forms has a positive impact on the development of key competencies and the overall performance of students at school.

From the absence of a statistically significant relationship between the experience of teachers in elective entrepreneurship activities and their opinion regarding the inclusion of entrepreneurship in elementary school, as well as in the choice of didactic methods, it can be concluded that teachers understand the importance of teaching entrepreneurship at primary school level, regardless of whether they have such experience. This is also confirmed by the responses in the survey regarding the reasons why they did not lead such optional activities – the most frequently mentioned is that they do not feel prepared. On the other hand, when asked if they would lead such activities, more than half of the respondents express their readiness and willingness to do so.

## 4.2. Analysis of the results of the pedagogical experiment

The paragraph presents and analyses the data from the conducted pedagogical experiment.

The experimental training was conducted in the period March – June 2021. The students are divided by groups and schools as follows (see Table 3):

*Table 3. Distribution of students by groups and schools*

School	E (No)	E (%)	C (No)	C (%)	Total (No)	Total (%)
112 <sup>th</sup> “Stoyan Zaimov” Basic School, Sofia	10	9,9	14	13,6	24	11,8
“Otets Paisii” Basic School, Ruse	17	16,8	14	13,6	31	15,2

“Lyuben Karavelov” Secondary School, Dobrich	16	15,8	18	17,5	34	16,7
“Emilian Stanev” Secondary School, V. Tarnovo	14	13,9	9	8,7	23	11,3
3 <sup>rd</sup> “Gotse Delchev” Basic School, Petrich	19	18,8	20	19,4	39	19,1
“St. Kliment Ohridski” Secondary School, Rakitovo	16	15,8	16	15,5	32	15,7
“Vasil Levski” Basic School, Bulgarovo	9	8,9			21	10,3
“Hristo Botev” Basic School, Marinka			12	11,7		
Total	101	100	103	100	204	100

Due to the small number of students in "Vasil Levski" Basic School, Bulgarovo, and “Hristo Botev Basic School, Marinka, the experimental group was formed from one school, and the control group – from the other. The two settlements have similar demographic characteristics and geographical location, and the schools are of the same type – basic, with almost the same number of students.

The locations of the schools are selected by population and administrative function. Included are: capital city (with a population of over 1 million people), regional centre (belonging to the group of the six largest cities with a population of over 100 thousand people), regional centre (with a population of less than 99 thousand people), municipal centre ( with a population between 20,000 and 50,000 people), a municipal centre (with a population of less than 20,000 people) and another populated place – a small town or village.

In the *quantitative analysis* of the results of the pre- and post tests, the mean values and the standard deviation of the experimental group (N101) and the control group (N103) were determined, which were checked by Levine's Test.

Before applying Levin's test, it was checked whether the results of the input test had a normal distribution, using the Kolmogorov-Smirnov test (K-S test).

By means of a t-test, with the chosen level of significance being  $\alpha = 0.05$ , it was checked whether there was a statistically significant difference in the results of the input test. The results of the entrance test showed close mean values in the experimental and control groups (Figure 1).

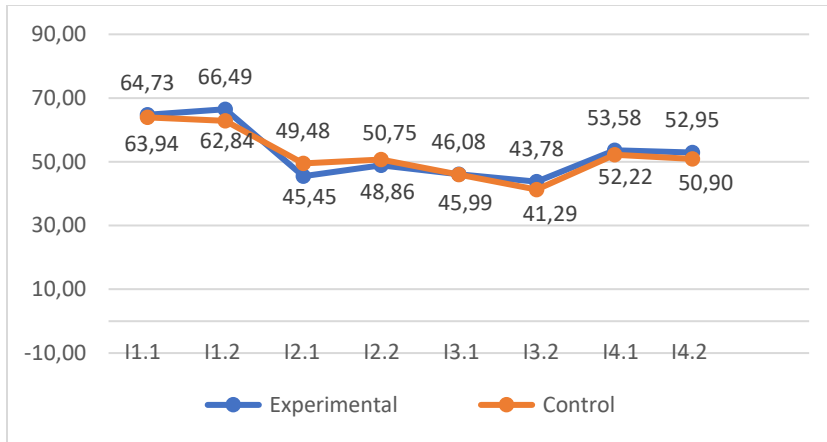


Figure 1. Mean values of the results of the experimental and control groups of the pre-test by indicators

To check whether the two groups are comparable, Levene's Test for independent samples analysis was used. A null hypothesis ( $H_0$ ) is defined, which states that the mean values of the entrance test results in the two groups do not differ significantly. The alternative hypothesis states that the two means are significantly different. The level of significance  $\alpha=0.05$ .

In the entry test, no statistically significant difference was found in the results of the two groups, as for all indicators the level of significance  $p$  (Sig. (2-tailed)) was greater than 0.05. This gives us reason to claim that the experimental group (N101) and the control group (N103) can be considered comparable.

It should be noted that the highest results in both groups are according to indicators: *I1.1. Knowledge of basic concepts and processes* and *I1.2. Distinguishing between concepts and processes*. The lowest are in the answers to the tasks to indicators *I2.1. Understanding the relationship between concepts and processes* and *I3.2. Identifying opportunities to create value*. It can be concluded that students perform expectedly best with test questions where an answer is chosen from given options, while tasks requiring both a conscious understanding of the topic and the ability to formulate a logically connected, clear and accurate answer, make it difficult for them.

After the training conducted during the second academic term of the 2020 – 2021 school year, a second assessment was made through a post test. In the results of all indicators, a significant statistical difference is reported, which cannot be attributed to random factors.

Levene's Test was applied again to test the hypotheses  $H_0$  and  $H_1$ . The results show that there is a statistically significant difference in the results of the two groups, since for all indicators  $p=.00 < 0.05$ , except



for the results in P2.1 and P.2.2, where  $p=0.001<0.05$ . A significant statistical difference is reported for all indicators, which cannot be attributed to random factors.

The experimental group showed results significantly higher than the specified success threshold of 50% in all indicators. The best performance was reported for indicators: *I.1. Knowledge of basic concepts and processes* (78.04%), *I4.2. Compilation of budgets* (78.62%) and *I4.1. Planning activities or resources* (72.13%). The results of indicator 2.1 and 3.2, which have the lowest values in the incoming test, have been improved. The lowest result is for indicator *I3.2 Identification of value creation opportunities* – 59.95%, which is almost 10 points above the success threshold. The average for the entire group rose to 16.3 points and was 18 points above the pass threshold.

In the control group, no significant change was observed in the results of the two tests. The only major change is reported for indicator *I2.2. Application of knowledge in a specific situation* and indicator *I4.2. Compilation of budgets*. Expressed as a percentage, the change in the values of the entire group is 3.1 points and is only 5.2 points above the threshold for success. These data can be explained by the fact that, in addition to the content of the experimental syllabus, the post test also checks the learning outcomes of the technologies and entrepreneurship curriculum for grade 4. It should also be taken into account that the tasks – and especially the case study – are designed so that the students can apply their knowledge and skills related to other key competencies and especially to Bulgarian language and mathematics.

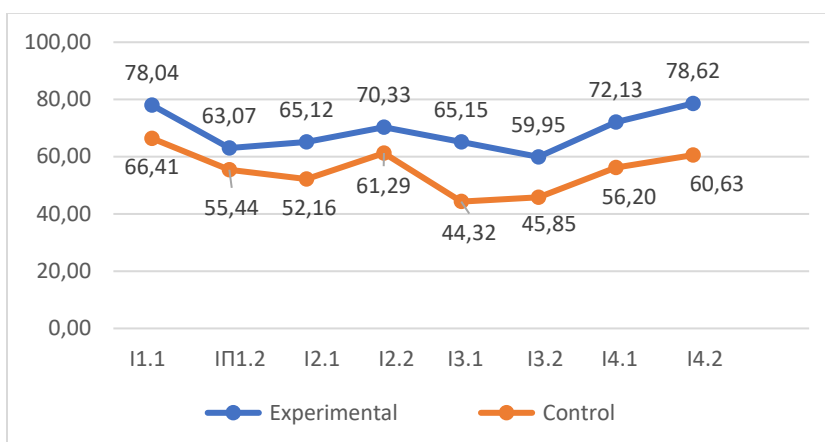


Figure 2. Comparison between the mean values of the experimental and control groups from the post test by indicators

The conducted Levine's test shows that there is a significant statistical difference between the results of the experimental and control groups in the post test, and in the experimental group the increase in results is more significant compared to the control group, while in the pre-test no such difference was established. Also, there is a statistically significant difference between the pre- and post test scores of the experimental group, while none is observed for the control group.

This gives reason to claim that the conducted experiment was successful and proves the positive influence of the developed didactic technology for training in entrepreneurship at the initial stage, which confirms the hypothesis raised in the dissertation work. The effectiveness of the didactic technology and the developed teaching materials is confirmed.

As stated, the test is based on both the experimental syllabus and grade 4 technologies and entrepreneurship syllabus. In this sense, the results of the control group raise questions about the level of the knowledge, skills and attitudes through which the sense of initiative and entrepreneurship is built as a key competence within the compulsory classes on technology and entrepreneurship. At the same time, after the training, the experimental group showed significant progress in all indicators and criteria, which speaks of effective construction of the knowledge, skills and attitudes achieved as the goal of the experiment, part of the entrepreneurial competence.

However, it should be noted that there are also significant differences in the results of the experimental group in the different schools. This can be explained by various factors that had an impact on the learning process – the individual characteristics of the students, the level of their general preparation, the personal and professional qualities of the teachers.

### **4.3. Analysis of the results of the expert evaluation**

The paragraph presents and analyses the data from the expert assessment.

The participants in the expert evaluation are a total of 49 people, of which 7 primary teachers who participated in the experiment, 34 teachers (22 primary and 2 in economic disciplines), 8 professors from higher education institutions. (in economic disciplines and 2 – in pedagogical). The experts are from 15 settlements. By gender, there are 6 men and 43 women. The experts are divided into three groups, and a separate map has been developed for each group.

The expert cards are semi-standardized and contain questions rated on a five-point scale (with the highest score being 5 and the lowest being 1) as well as free-response questions. Some of the

questions refer only to a given group due to the specifics of the experts' different areas of competence. The statistical package SPSS was used for the quantitative analysis.

For the experts – teachers who participated in the experiment, *Expert Card No. 1* was used. The questions that are specific to them are related to the conduct of the experiment.

The *quantitative analysis* shows that the average scores for the individual criteria are between 4.43 and 5. The results of the distribution of the numerical characteristics of the average values for each of the questions in Expert Card No. 1 allow us to state the following:

According to the experts, the selected topics and concepts are important for building initiative and entrepreneurship and are appropriate for the age group. The approach in developing the business model is tailored to the cognitive abilities of students of this age group. The used methods and the proposed didactic technology have been evaluated as effective. The methodological guidelines for the teacher contain the necessary instructions for work, as well as an information base for the economic tools used. The *qualitative analysis* of the results shows that the teachers gave a very high overall assessment of the experimental curriculum, the teaching materials and the applied didactic technology.

The second group of experts – primary teachers and teachers of economic subjects at the secondary level of school education, filled out *Expert Card No. 2*, including questions about the syllabus, content of teaching materials and didactic technology.

The *quantitative analysis* shows that the average values for each of the signs are high (between 4.71 and 4.79), which gives reason to believe that the chosen approach in defining the topics and concepts in the curriculum is appropriate. Topics and concepts are age-appropriate and presented appropriately. The methods and techniques used are combined in a very good way and are effective. The teaching materials are in an accessible language, and the methodological guidelines contain the necessary information for the teacher. Qualitative data analysis confirms the opinion of the experts from the first group. The overall evaluation of the teachers from both subgroups – primary and economic disciplines – is very high, emphasizing that the topics are well chosen, presented in an original way and contribute to the development of initiative and entrepreneurship.

*Expert Card No. 3* was completed by the third group of experts – university lecturers in economic and pedagogical disciplines. The questions are focused on the accurate interpretation of the included economic concepts and topics from a content point of view. The content of the information base is also evaluated from the point of view of its informative value for teachers. The *quantitative analysis* shows that the average value for the individual questions vary between 4.5 and 5. The *qualitative analysis* confirms the high evaluation of the other two groups of experts.

The conclusions from the evaluation of the three groups of experts can be summarized as follows:

- The chosen approach in syllabus development, learning content and didactic technology are fully applicable to 4th grade students
- The syllabus includes important and necessary topics and concepts for the development of initiative and entrepreneurship
- The educational content is presented in a way that is accessible to the age group, while accurately and correctly reflecting the topics and concepts considered, related to building economic and financial literacy and entrepreneurial skills
- The proposed didactic technology enables effective training in entrepreneurship and, accordingly, the development of initiative and entrepreneurship as a key competence
- All elective activities specified as options – interest-based activities, elective and optional hours, project work, can be effectively used to implement experimental entrepreneurship education
- The recommendations of the experts from the different groups are to create similar teaching materials and for other grades to be used through the offered didactic technology, transforming some of the materials into a digital version, expanding and enriching them with interactive exercises, crosswords, puzzles and mind maps.

## CONCLUSION

The research findings give reason to accept and claim that the set *aim* has been achieved: the effectiveness of the created and tested didactic technology for the development of the sense of initiative and entrepreneurship in elective activities to expand and complement technologies and entrepreneurship in general education has been established.

The *objectives* set to fulfil the main goal have been achieved, and the most important conclusions related to them can be summarized as follows:

- The study and analysis of the literature related to entrepreneurship education and the analysis of the educational documentation on technologies and entrepreneurship, including its mapping against the European framework of entrepreneurial competence, show that there are significant gaps and problems to the education in entrepreneurship at primary level of the Bulgarian school and the corresponding development of initiative and entrepreneurship (entrepreneurship)

- The survey among primary teachers on the pedagogical effect of elective entrepreneurship activities on the performance of students at school and the development of key competences confirms the above findings, bringing to the fore issues related to the theoretical and methodological preparation of teachers in entrepreneurship

- Based on the findings of the teachers' survey, it can be concluded that the main obstacles to entrepreneurship education as an elective activity are related to the insufficient theoretical and methodological training of teachers, as well as the misunderstanding of some school leaders about the benefits of entrepreneurship education

- The findings of the conducted pedagogical experiment, based on the determined criteria and indicators, allow to be concluded that there is a correlation between the conducted training on the author's didactic technology, based on the author's syllabus and learning materials, and the development of initiative and entrepreneurship built

- Students' knowledge related to entrepreneurship competence in the field of economics, entrepreneurship and finance has been improved, as well as their skills for knowledge transfer in different contexts, creative and innovative thinking, resource management.

- Based on the findings of the expert evaluation, it can be concluded that the author's syllabus includes topics and concepts necessary to build an understanding of the entrepreneurial process, based on which students develop knowledge, skills and attitudes related to initiative and entrepreneurship as key competence

- The author's teaching materials have a significant impact on the development of initiative and entrepreneurship, evident from the results of the pedagogical experiment

- From the implementation of the developed training programme for teachers on the essence and aims of entrepreneurship education at primary level and its methodological aspects, it can be concluded that teachers have increased their knowledge of the subject

- From the conducted survey and expert assessment, it can be concluded that all the forms proposed in the syllabus are suitable for additional training in entrepreneurship – elective and optional hours, interests-based and project activities.

The research results confirm the raised *hypothesis*, which assumes that the application of an author's didactic technology for entrepreneurship education through the experiential learning approach, developed on the basis of an author's curriculum, consistent with the European Entrepreneurship Competence Framework, and author's educational materials in the form of a book and worksheets will

contribute to the development of the key competence of initiative and entrepreneurship among students in grade 4 and will help teachers improve their pedagogical competences.

The *contributions* of the dissertation can be summarized as follows:

**Приносителите** на дисертационния труд мога да бъдат обобщени, както следва:

1. Mapping of the educational documentation on technologies and entrepreneurship against the European Entrepreneurship Competence Framework, as a result of which the existing gaps and weaknesses have been identified and the knowledge, skills and attitudes necessary for the age group have been derived. The mapping can serve as a basis for future revision of the study documentation.

2. Based on the mapping, a concept was created for the content of entrepreneurship education at primary level, reflected in an author's syllabus and tested within the framework of the pedagogical experiment.

3. An author's didactic technology for training in entrepreneurship was created and tested, which has a proven positive impact on the development of initiative and entrepreneurship among students in grade 4, established on the basis of the pedagogical experiment conducted in 2021.

4. Author's course materials were created and published, including the book “Small stories for entrepreneurs” and worksheets to it, through which the didactic technology is implemented.

5. Criteria and indicators have been developed for assessing the knowledge and skills related to initiative and entrepreneurship as a key competence.

6. Methodical guidelines for training in entrepreneurship through applying the didactic technology have been developed, containing an information base for the included economic topics and concepts.

7. Development and implementation of an author's training programme to increase the qualifications of teachers and their pedagogical competence in teaching entrepreneurship at the initial stage.

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